

fine growth lines, a few coarser lines spaced at irregular intervals producing a somewhat costated appearance. Cross striae absent.

Type: Length 6.6, width 4.8, aperture length 5.5 mm. (U. of M. No. 31617.)

Cotype: Length 6.3, width 4.8, aperture length 5.5 mm. (Walker, No. 75895.)

Cotype: Length 6.4, width 5.0, aperture length 5.8 mm. (Clench, No. 1378.)

Cotype: Length 5.5, width 4.4, aperture length 4.8 mm. (A. N. S. Phila.)

Type locality: Comanche Spring, Fort Stockton, Pecos Co., Texas.

Remarks: This species of *Physa* is rather small as compared with other species of the genus, especially among the shouldered forms. It agrees with *Physa lordi* Baird in general outline but differs in being smaller in size, in having a white lip callus, and less thickening and folding of the columella. A well-formed callus is found on the type and two of the cotypes; this callus is lacking on the fourth, a juvenile specimen.

Type deposited in the Museum of Zoology, University of Michigan; cotypes in the collection of Dr. Bryant Walker of Detroit, in my own collection, and in that of the Academy of Natural Sciences of Philadelphia.

RADULA TECHNIQUE FOR PHYSA.

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The following method has been found excellent for the extraction, staining and mounting the radula of *Physa*. As a preliminary preparation in the field the mollusks were killed by boiling and were then preserved in 70% alcohol. Placing the *Physa* in a strainer and then dipping in boiling water for thirty seconds was found to be the best method. This allowed easy extraction of the animals from the shells. When time

was available for the study of the radulæ, the head and foot were cut from the rest of the body and dropped into a test-tube containing a solution of potassium or sodium hydroxide (20 to 40%). The animals remained in this solution for two or three days, macerating slowly with the aid of radiator heat. Usually at the end of forty-eight hours the radulæ were free from the animal tissue and were then transferred to distilled water. From the water the radulæ were transferred first to chrom-osmic acid, next to crude pyroligneous acid, and then to 96% alcohol. Only a small amount of each acid, sufficient to cover the radulæ, is necessary.

Euparol was found to be excellent for mounting, much superior to balsam, inasmuch as complete dehydration and clearing is unnecessary. Furthermore, the refractive index of euparol is considerably less than that of balsam, hence fine details are better revealed under high power. The radulæ can be transferred directly from the 96% alcohol to the mounting medium. In the following outline the general procedure for the method is stated in brief form.

20-40% potassium or sodium hydroxide, 48-72 hours
Distilled water, 15 minutes
Chrom-osmic acid, 2-3 hours
Crude pyroligneous acid, 12-24 hours
96% alcohol, 15 minutes
Euparol.

The chrom-osmic acid is made by dissolving 1 gram of osmic acid in 50 cc. of a 1% solution of chromic acid. Best results will be obtained by using thin Euparol. Diaphane or Mountene may be used in place of Euparol, as these three mounting mediums are the same but sold under different trade names.

This is an impregnation method of staining and results in a uniform opaque brown stain.